
ENVIRONMENTAL Fact Sheet



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Iron Bacteria in Surface Water

What are iron bacteria?

Iron bacteria are bacteria that 'feed' on iron. Unlike most bacteria, which feed on organic matter, iron bacteria fulfill their energy requirements by oxidizing ferrous iron into ferric iron. When ferrous iron is converted to ferric iron, it becomes insoluble and precipitates out of the water as a rust-colored deposit. This process can occur simply by exposing iron-rich groundwater to the atmosphere. However, if the deposit is slimy and clumpy, it is probably caused by iron bacteria.

Are iron bacteria harmful?

Iron bacteria are of no threat to human health. They are found naturally in soils and water. However, the orange slime in the water or leaching from the shore is often considered to be an aesthetic problem. The oily sheens created by the decomposing bacteria cells are often mistaken for petroleum sheens.

What causes iron bacteria?

Iron is a common element in New Hampshire soils. Consequently, iron-fixing bacteria have existed in our natural waters for over a million years. Iron-rich fill material or bedrock can create an iron bacteria problem whenever it is located near water. In general, wherever there is oxygen, water and iron there is the potential for an iron bacteria problem.

How can we identify iron bacteria?

Orange or brown slime (precipitate) and oily sheens are often the first indication that these bacteria are present. Unlike petroleum sheens the iron bacteria sheens break apart when they are disturbed. The orange or brown slime may be collected in a jar and analyzed microscopically at DES to identify the bacteria type.

What can we do about iron bacteria?

The best treatment for an iron bacteria problem is prevention. To thwart these obnoxious bacteria, have all fill material analyzed for iron content before using or exposing it. Unfortunately, once established, iron bacteria problems are difficult, if not impossible to correct. Sometimes iron-rich fill can be replaced by fill with a lower iron content. However, this may be extremely costly and have other environmental impacts. Since iron bacteria are not harmful, sometimes the only feasible thing that people can do is simply to accept it for the natural occurrence that it is.

For further information: For more information on iron bacteria, please contact DES's Biology Bureau 603-271-3503.